

To Rev A.D. 5/10/12/23

Work Order ID 138074

Friday, October 23, 2015 10:07:57 AM

\*138074\*

PRELIMINARY ISSUE

Page 1

Item ID: D5345-1 Accept \*N900040100\* Setup Start \*NS1\*  
Revision ID: PRELIM Stop \*NS2\*  
Item Name: Internal Retaining Ring

Start Date: 10/27/2015 Start Qty: 50.00 \*50\* Cust Item ID:  
Required Date: 10/27/2015 Req'd Qty: 50.00 \*50\* Customer:

Reference:

Approvals: Process Plan: CY Date: OCT 23 2015 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description                   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr                       | Revision Nbr                               |                      |         |        |              |               |               |                  |                |
| D5345                          | A2 <u>Rev A</u>                            |                      |         |        |              |               |               |                  |                |
| 100                            |                                            | 0.00                 |         |        |              |               |               |                  |                |
| *100*                          |                                            |                      |         |        |              |               |               |                  |                |
| Purchasing                     | Memo                                       | 0.00                 |         |        |              |               |               |                  |                |
| Purchasing                     | Issue P/O: 30221                           |                      |         |        |              |               |               |                  |                |
|                                | Supplier P/N: 98409A171                    |                      |         |        |              |               |               |                  |                |
|                                | Possible supplier: McMasterCarr            |                      |         |        |              |               |               |                  |                |
|                                | C of C is required.                        |                      |         |        |              |               |               |                  |                |
| 110                            | Receive & Inspect for Damage & Mat'l Certs | 0.00                 |         |        |              |               |               |                  |                |
| *110*                          |                                            |                      |         |        |              |               |               |                  |                |
| Packaging                      | Memo                                       | 0.00                 |         |        |              |               |               |                  |                |
| Packaging                      |                                            |                      |         |        |              |               |               |                  |                |

CY OCT 23 2015 50

50x SP15-10-27

**Work Order ID 138074**

**\*138074\***

Page 2

Friday, October 23, 2015 10:07:57 AM

Item ID: D5345-1 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: PRELIM Stop **\*NS2\***  
 Item Name: Internal Retaining Ring  
 Start Date: 10/27/2015 Start Qty: 50.00 **\*50\*** Cust Item ID:  
 Required Date: 10/27/2015 Req'd Qty: 50.00 **\*50\*** Customer:

**Reference:**

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID                | Operation<br>Description                                        | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp                   |
|-----------------------------------------------|-----------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------------------------|
| 120<br><b>*120*</b><br>QC<br>Quality Control  | QC6- Inspect dimensions to drawing<br><br>Memo                  | 0.00<br><br>0.00     |         |        |              | (50)          |               |                  | DAS<br>38<br>9-89<br>OCT 27 2015 |
| 130<br><b>*130*</b><br>Packaging<br>Packaging | Identify as per dwg & Stock Location: <b>PRELIM</b><br><br>Memo | 0.00<br><br>0.00     |         |        |              | (50)          |               |                  | DAS<br>38<br>9-89<br>OCT 27 2015 |
| 140<br><b>*140*</b><br>QC<br>Quality Control  | QC21- Final Inspection - Work Order Release<br><br>Memo         | 0.00<br><br>0.00     |         |        |              |               |               |                  | MCS 1571-13                      |

**POSITIVE RECALL**

EFFECTIVE \_\_\_\_\_ AUTH \_\_\_\_\_  
 RELEASED **DAS** DATE **2016/01/23**

**16**  
**RP15-1016-01**

*To Rev A Drawing  
 5/6/01/23*



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO30221**

Purchase Order Date 10/21/2015

PO Print Date 10/23/2015

Page Number 3 of 6

**Order From :**

VU-MCM001

**Ship To :** DART AEROSPACE LTD

MCMaster-CARR SUPPLY CO,  
P.O. BOX 7690  
CHICAGO, IL 60680-7690  
US

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**Contact Name**

**Vendor Phone** 330 995 5500

**Buyer**

Chantal Lavoie

**Customer POID**

**Customer Tax #**

10127-2607

**Terms**

Net 10

**Currency**

USD

**FOB**

FCA - (Free Carrier)

**Ship To Contact**

**Ship To Phone**

**Ship Via:**

Purolator ground ppd

**Ship Acct:**

7 98409A171

Internal Retaining Ring  
(Chromate-Plated Steel)

10/28/2015 FN

50.00

\$0.22

\$11.08

Yes

10/28/2015

Each

AS PER DWG D5345 REV.A2  
B138074

Line Total:

\$11.08

8 59915K274

Rod End Bearing

10/28/2015

18.00

\$17.14

\$308.52

Yes

10/28/2015

Each

AS PER DWG D4777 REV. A  
B138047

Line Total:

\$308.52

9 71900-90

8491A812 DRILL  
BUSHING

10/28/2015

10.00

\$8.90

\$89.00

Yes

10/28/2015

Each

Line Total:

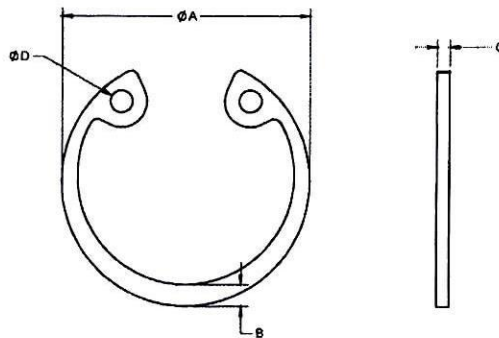
\$89.00

Deliver To: DAVID.D

Note:

10/23/2015

# **SPECIFICATION CONTROL DRAWING**



R44  
RDS-101601  
X20

## **D5345-X INTERNAL RETAINING RING**

| DART PART NUMBER | DESCRIPTION             | ØA                  | B    | C     | ØD    | VENDOR        | VENDOR PART NUMBER     | MATERIAL                                 |
|------------------|-------------------------|---------------------|------|-------|-------|---------------|------------------------|------------------------------------------|
| D5345-1          | INTERNAL RETAINING RING | 0.894 ± 0.010/0.005 | 0.06 | 0.035 | 0.062 | MCMaster CARR | 88400A171<br>91580A171 | CHROMATE-PLATED STEEL<br>STAINLESS STEEL |

11.08/50  
1254/10

- NOTES:  
 1) MATERIAL: PER TABLE  
 2) FINISH: N/A  
 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED  
 4) UNITS: INCHES UNLESS OTHERWISE NOTED  
 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX  
 6) IDENTIFICATION: N/A  
 7) WEIGHT: N/A

PRELIMINARY ISSUE

| REV.       | NEW ISSUE | DESCRIPTION | RF | DATE |
|------------|-----------|-------------|----|------|
| DESIGN     | RF        |             |    |      |
| DRAWN      | RF        |             |    |      |
| CHECKED    | AK        |             |    |      |
| MFG. APPR. | JLM       |             |    |      |
| APPROVED   |           |             |    |      |
| DE APPR.   |           |             |    |      |
| DATE       | 15.08.10  |             |    |      |

**DART AEROSPACE LTD**  
 HAWKESBURY, ONTARIO, CANADA  
 DRAWING NO. **D5345**  
 REV. **A2**  
 SHEET 1 OF 1  
 TITLE **INTERNAL RETAINING RING**  
 SCALE **NTS**

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 ALL RIGHTS RESERVED. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM DART AEROSPACE LTD.

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐



| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Cross tube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> |                                                            |                                                                                                                        |                                               | Skid-tube <input type="checkbox"/> | Cross tube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/>            | Thermoforming <input type="checkbox"/>   | Finishing <input type="checkbox"/>        | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/>            | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                                             |                                            |                                   |                                          |                                |                                        |                                          |                                     |                                             |                                           |                                   |                                      |                                  |                                  |                                           |                                  |                                     |                                        |                                     |                                 |                              |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |  |  |  |  |
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| Skid-tube <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Machining <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Quality <input type="checkbox"/>                           |                                                                                                                        |                                               |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                                             |                                            |                                   |                                          |                                |                                        |                                          |                                     |                                             |                                           |                                   |                                      |                                  |                                  |                                           |                                  |                                     |                                        |                                     |                                 |                              |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |  |  |  |  |
| Thermoforming <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Large Fab <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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     |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |  |  |  |  |
| Date : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            | MRB (QS1042) Approval                                                                                                  |                                               |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| <b>Description Work Order Deviation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                    | <b>Disposition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            | Completed By _____<br><br>Lead hand / Supervisor Approval Verification _____<br><br>QC / QA Coordinator Approval _____ |                                               |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         |                                       |                                   |                                                 |                                                            |                                             |                                            |                                   |                                          |                                |                                        |                                          |                                     |                                             |                                           |                                   |                                      |                                  |                                  |                                           |                                  |                                     |                                        |                                     |                                 |                              |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |  |  |  |  |
| <table style="width: 100%;"> <tr> <th colspan="3" style="text-align: left;">Root Cause</th> <th colspan="3" style="text-align: left;">FAULT CATEGORY</th> </tr> <tr> <td style="width: 15%;">Environment <input type="checkbox"/></td> <td style="width: 15%;">No Re-verification <input type="checkbox"/></td> <td style="width: 15%;">Pressure/Forced <input type="checkbox"/></td> <td style="width: 15%;">Temperature/Cure <input type="checkbox"/></td> <td style="width: 15%;">Power Loss/Surge <input type="checkbox"/></td> <td style="width: 15%;">Positioned Wrong <input type="checkbox"/></td> </tr> <tr> <td>Design <input type="checkbox"/></td> <td>Operator <input type="checkbox"/></td> <td>Bending <input type="checkbox"/></td> <td>Set-up <input type="checkbox"/></td> <td>Folio/Program <input type="checkbox"/></td> <td>Outside Dimensions <input type="checkbox"/></td> </tr> <tr> <td>Doc/Data <input type="checkbox"/></td> <td>Offset/Setup <input type="checkbox"/></td> <td>Centre Not Concentric <input type="checkbox"/></td> <td>BOM/Route <input type="checkbox"/></td> <td>Grain <input type="checkbox"/></td> <td>Over/Under tolerance <input type="checkbox"/></td> </tr> <tr> <td>Equip/Tooling <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td>Cracks <input type="checkbox"/></td> <td>Broken/Damage/Defect <input type="checkbox"/></td> <td>Weld <input type="checkbox"/></td> <td>Part Incorrect <input type="checkbox"/></td> </tr> <tr> <td>Handling/Pre <input type="checkbox"/></td> <td>Training <input type="checkbox"/></td> <td>Crimp/Kink/Ripple/Wave <input type="checkbox"/></td> <td>Inspection Incomplete/Unqualified <input type="checkbox"/></td> <td>Wrong Stock Pulled <input type="checkbox"/></td> <td>Part Lost/Missing <input type="checkbox"/></td> </tr> <tr> <td>Material <input type="checkbox"/></td> <td>Use for Testing <input type="checkbox"/></td> <td>Cuffs <input type="checkbox"/></td> <td>Contamination <input type="checkbox"/></td> <td>Out of Sequence <input type="checkbox"/></td> <td>Part Moved <input type="checkbox"/></td> </tr> <tr> <td>Internal Transport <input type="checkbox"/></td> <td>Poor Information <input type="checkbox"/></td> <td>Crushing <input type="checkbox"/></td> <td>Countersink <input type="checkbox"/></td> <td>Off-set <input type="checkbox"/></td> <td>Drawing <input type="checkbox"/></td> </tr> <tr> <td>Tribal Knowledge <input type="checkbox"/></td> <td>Rushing <input type="checkbox"/></td> <td>Heat Treat <input type="checkbox"/></td> <td>Cut Too Short <input type="checkbox"/></td> <td>Mislabeled <input type="checkbox"/></td> <td>Finish <input type="checkbox"/></td> </tr> <tr> <td>LOA <input type="checkbox"/></td> <td>Product Improvement <input type="checkbox"/></td> <td>Wave/Twist in Tube <input type="checkbox"/></td> <td>Instructions Incomplete/Unclear <input type="checkbox"/></td> <td>Fit/Function <input type="checkbox"/></td> <td>Misread <input type="checkbox"/></td> </tr> <tr> <td>Substation <input type="checkbox"/></td> <td>Process Improvement <input type="checkbox"/></td> <td>Marks/Chatter <input type="checkbox"/></td> <td>Drill Holes <input type="checkbox"/></td> <td>Misaligned/off center <input type="checkbox"/></td> <td>Turning Sequence <input type="checkbox"/></td> </tr> <tr> <td>Past Expiry Date <input type="checkbox"/></td> <td>Manufacturing Process <input type="checkbox"/></td> <td colspan="4" style="text-align: left;">OTHER : _____</td> </tr> <tr> <td>Misidentified <input type="checkbox"/></td> <td>Past Due <input type="checkbox"/></td> <td colspan="4"></td> </tr> </table> |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                            |                                                                                                                        |                                               | Root Cause                         |                                     |                                    | FAULT CATEGORY                       |                                    |                                    | Environment <input type="checkbox"/>       | No Re-verification <input type="checkbox"/> | Pressure/Forced <input type="checkbox"/> | Temperature/Cure <input type="checkbox"/> | Power Loss/Surge <input type="checkbox"/>    | Positioned Wrong <input type="checkbox"/> | Design <input type="checkbox"/>    | Operator <input type="checkbox"/>  | Bending <input type="checkbox"/>  | Set-up <input type="checkbox"/> | Folio/Program <input type="checkbox"/> | Outside Dimensions <input type="checkbox"/> | Doc/Data <input type="checkbox"/> | Offset/Setup <input type="checkbox"/> | Centre Not Concentric <input type="checkbox"/> | BOM/Route <input type="checkbox"/> | Grain <input type="checkbox"/> | Over/Under tolerance <input type="checkbox"/> | Equip/Tooling <input type="checkbox"/> | Supplier <input type="checkbox"/> | Cracks <input type="checkbox"/> | Broken/Damage/Defect <input type="checkbox"/> | Weld <input type="checkbox"/> | Part Incorrect <input type="checkbox"/> | Handling/Pre <input type="checkbox"/> | Training <input type="checkbox"/> | Crimp/Kink/Ripple/Wave <input type="checkbox"/> | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/> | Part Lost/Missing <input type="checkbox"/> | Material <input type="checkbox"/> | Use for Testing <input type="checkbox"/> | Cuffs <input type="checkbox"/> | Contamination <input type="checkbox"/> | Out of Sequence <input type="checkbox"/> | Part Moved <input type="checkbox"/> | Internal Transport <input type="checkbox"/> | Poor Information <input type="checkbox"/> | Crushing <input type="checkbox"/> | Countersink <input type="checkbox"/> | Off-set <input type="checkbox"/> | Drawing <input type="checkbox"/> | Tribal Knowledge <input type="checkbox"/> | Rushing <input type="checkbox"/> | Heat Treat <input type="checkbox"/> | Cut Too Short <input type="checkbox"/> | Mislabeled <input type="checkbox"/> | Finish <input type="checkbox"/> | LOA <input type="checkbox"/> | Product Improvement <input type="checkbox"/> | Wave/Twist in Tube <input type="checkbox"/> | Instructions Incomplete/Unclear <input type="checkbox"/> | Fit/Function <input type="checkbox"/> | Misread <input type="checkbox"/> | Substation <input type="checkbox"/> | Process Improvement <input type="checkbox"/> | Marks/Chatter <input type="checkbox"/> | Drill Holes <input type="checkbox"/> | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/> | Past Expiry Date <input type="checkbox"/> | Manufacturing Process <input type="checkbox"/> | OTHER : _____ |  |  |  | Misidentified <input type="checkbox"/> | Past Due <input type="checkbox"/> |  |  |  |  |
| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| Environment <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Design <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Doc/Data <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                                                                                         | Over/Under tolerance <input type="checkbox"/> |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Equip/Tooling <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Handling/Pre <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>                                                                            | Part Lost/Missing <input type="checkbox"/>    |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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     |                                              |                                             |                                                          |                                       |                                  |                                     |                                              |                                        |                                      |                                                |                                           |                                           |                                                |               |  |  |  |                                        |                                   |  |  |  |  |
| Material <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Internal Transport <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Tribal Knowledge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| LOA <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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                       |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Substation <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/>                                                                         | Turning Sequence <input type="checkbox"/>     |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                             |                                          |                                           |                                              |                                           |                                    |                                    |                                   |                                 |                                        |                                             |                                   |                                       |                                                |                                    |                                |                                               |                                        |                                   |                                 |                                               |                               |                                         | 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| Past Expiry Date <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Misidentified <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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**Picklist Print**

Page 1

Friday, October 23, 2015 10:07:55 AM

Work Order ID: 138074

**\*138074\***

Parent Item: D5345-1

**\*D5345-1\***

Parent Item Name: Internal Retaining Ring

Start Date: 10/27/2015

Required Date: 10/27/2015

Start Qty: 50.00

Required Qty: 50.00

Comments: IPP REV:A 15.10.22 NEW ISSUE DD VERF:JLM

| Component Item ID/<br>Item Name                 | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|-------------------------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| 98409A171                                       |                        | Purchased     | No          |                     |                  |                 | Each               | 0.0000         |             | 50           |               |                |        |
| <b>*98409A171*</b>                              |                        |               |             |                     |                  |                 |                    |                | **          |              |               |                |        |
| Internal Retaining Ring (Chromate-Plated Steel) |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |        |

50 x SP 15-10-27



# Packing List

200 Aurora Industrial Pkwy  
Aurora OH 44202-8087  
330-995-5500  
cle.sales@mcmaster.com

Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury ON K6A 1K7  
Canada

Purchase Order  
**PO30221**

Order Placed By  
**Chantal Lavoie**

McMaster-Carr Number  
**2452334-01**

Page 1 of 1

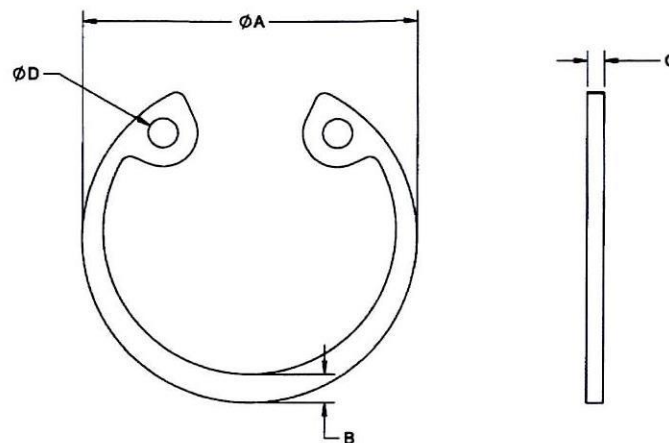
10/23/2015

| Line | Product                                                                                                                      | Ordered    | Shipped |
|------|------------------------------------------------------------------------------------------------------------------------------|------------|---------|
| 1    | <b>6264K85</b> Highly Corrosion-Resistant Roller Chain, 304 Stainless Steel, ANSI #40-Stainless Steel, 1/2" Pitch, 10' LG    | 1<br>Each  | 1       |
| 2    | <b>5709A52</b> Ball-Point Hex Set, L-Key, 13 Piece, .050"-3/8", Plastic Indexed Caddy                                        | 3<br>Each  | 3       |
| 3    | <b>5709A18</b> Ball-Point Hex Set, L-Key, 9 Pieces, 1.5MM-10MM, Plastic Indexed Caddy                                        | 3<br>Each  | 3       |
| 4    | <b>5855A13</b> Ball Peen Hammer with Hickory Handle, 8 oz Head, 1" Face Diameter, 11-3/4" Overall Length                     | 1<br>Each  | 1       |
| 5    | <b>5720A33</b> Cushion-Grip Screwdriver, 3/8" Tip Width, 8" Long Slotted Square Blade                                        | 3<br>Each  | 3       |
| 6    | <b>7260A222</b> Adjustable Wrench with Cushion-Grip, Black Finish, 6" L, 15/16" Jaw Cap                                      | 1<br>Each  | 1       |
| 7    | <b>98409A171</b> Zinc/Yellow Plated Steel Internal Retaining Ring, for 5/8" Bore Diameter, Packs of 50                       | 1<br>Pack  | 1 ✓     |
| 8    | <b>59915K274</b> PTFE-Lined Stainless Steel Ball Joint Rod End, 3/8"-24 Right-Hand Male Shank, 3/8" Ball ID, 1-1/4" L Thread | 18<br>Each | 18      |
| 9    | <b>8491A812</b> Press-Fit Drill Bushing, 0.1875" (3/16") ID, 3/8" OD, 1/2" Length                                            | 10<br>Each | 10      |
| 10   | <b>29415A55</b> High-Speed-Steel 1/2" Diameter Reduced-Shank Drill Bit, 1", 6" Overall Length, 2.10" Drill Depth             | 1<br>Each  | 1       |
| 11   | <b>10095K97</b> 5' Length of 1/4" ID, Loc-Line Any-Which-Way Coolant Hose, Packs of 1                                        | 1<br>Pack  | 1       |
| 12   | <b>10095K24</b> 1/4" Diameter Round Nozzle for 1/4" ID, Loc-Line Any-Which-Way Coolant Hose, Packs of 4                      | 1<br>Pack  | 1       |
| 13   | <b>10095K21</b> 1/8" Diameter Round Nozzle for 1/4" ID, Loc-Line Any-Which-Way Coolant Hose, Packs of 4                      | 1<br>Pack  | 1       |
| 14   | <b>10095K17</b> 1/16" Diameter Round Nozzle for 1/4" ID, Loc-Line Any-Which-Way Coolant Hose, Packs of 4                     | 1<br>Pack  | 1       |
| 15   | <b>7736A86</b> TIG Torch, Water Cooled, Series No. 20, 25' Rubber Hose                                                       | 1<br>Each  | 1       |
| 16   | <b>71455K58</b> Disposable Alkaline Battery, Size AA, Packs of 144                                                           | 1<br>Pack  | 1       |

## Notes about your shipment

The U.S. Department of Transportation regulates the shipping of line 16. By purchasing from McMaster-Carr Supply Company, you agree not to transport or permit others to transport purchased items except in accordance with U.S. law and any other applicable laws.

# SPECIFICATION CONTROL DRAWING



**D5345-X INTERNAL RETAINING RING**

| DART PART NUMBER | DESCRIPTION             | ØA                | B    | C     | ØD    | VENDOR        | VENDOR PART NUMBER     | MATERIAL                                 |
|------------------|-------------------------|-------------------|------|-------|-------|---------------|------------------------|------------------------------------------|
| D5345-1          | INTERNAL RETAINING RING | 0.694±0.010/0.005 | 0.06 | 0.035 | 0.062 | MCMaster CARR | 98409A171<br>91580A171 | CHROMATE-PLATED STEEL<br>STAINLESS STEEL |

## NOTES:

- 1) MATERIAL: PER TABLE
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: N/A

**RELEASED**  
2016-01-21  
ECL 11-514

|                                                                                                                                                                                                                                |             |                             |  |                                        |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------|--|----------------------------------------|----------|
| A                                                                                                                                                                                                                              |             | NEW ISSUE                   |  | RF                                     | 15.08.10 |
| REV.                                                                                                                                                                                                                           | DESCRIPTION |                             |  | BY                                     | DATE     |
| DESIGN                                                                                                                                                                                                                         | RF          | DART AEROSPACE LTD          |  | REV. A                                 |          |
| DRAWN                                                                                                                                                                                                                          | RF          | HAWKESBURY, ONTARIO, CANADA |  | SHEET 1 OF 1                           |          |
| CHECKED                                                                                                                                                                                                                        | AK          | DRAWING NO. D5345           |  | SCALE                                  |          |
| MFG. APPR.                                                                                                                                                                                                                     | JLM         | TITLE                       |  | NTS                                    |          |
| APPROVED                                                                                                                                                                                                                       | HS          | INTERNAL RETAINING RING     |  |                                        |          |
| DE APPR.                                                                                                                                                                                                                       | DS          | DATE 15.08.10               |  | COPYRIGHT © 2015 BY DART AEROSPACE LTD |          |
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